REMARKS

Claim 6 is amended to recite "an ester bond" in each instance in step e) of the recited method. Support for the amendment appears throughout the specification as filed, e.g., method steps b) and d) claim 6 and throughout the original claims.

It is respectfully submitted that the present response presents no new issues or new matter and places this case in condition for allowance. Reconsideration of the application in view of the following remarks is requested.

I. The Rejection of Claims 6, 8, 10 and 13 under 35 U.S.C. 103

Claims 6, 8, 10 and 13 stand rejected under 35 U.S.C. 103 as allegedly being unpatentable over Ohta et al., USPN 4,478,866 ("R1") in view of Petersen et al. "A rapid phospholipase D assay using zirconium precipitation of anionic substrate phospholipids: Application to N-acylethanolamine formation in vitro," J. Lipid Research, 41, 1532-1538 (2000) ("R2"). The Examiner outlines various teachings of the R1 and R2 references and concludes:

> 11. It is noted that a N-acyl phosphatidyl ethanolamine specific lipolytic enzyme is being assayed and selected as presently claimed. It is also noted that N-acyl phosphatidyl ethanolamine is a natural constituent of wheat flour. Therefore, it is obvious to assay and select a N-acyl phosphatidyl ethanolamine specific lipolytic enzyme and incorporate it into wheat flour to cause the hydrolysis of the naturally occurring NAPE and the concomitant formation of lysophosphatidyl ethanolamine and finaly convert it to lysophosphatidic acid which will function as a valuable emulsifier in the dough.

12. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use phospholipase A and phospholipase D for baking as taught by R1 and assay and select a NAPE specific phospholipase A or phospholipase D as taught by R2. One would do so to cause a selective hydrolysis of natural N-acyl phosphatidyl ethanolamine in wheat flour and take advantage of the emulsifying properties of the resulting lysophosphatidic acid. Absent any evidence to contrary and based on the combined teachings of the cited references, there would be a reasonable expectation of success in assaying and selecting a NAPE specific phospholipase D to be used in baking bread.

Office Action, page 4.

The Examiner further states that Applicants' prior arguments have been considered but are not persuasive. The Examiner argues that R1 discloses the importance and the effect of using phospholipase A and phospholipase D. The Examiner states that claim 1 requires detection of the hydrolysis of an ester bond in N-acyl phosphatidyl ethanolamine but does not specify which ester bond(s) is/are required to be broken in the phospholipid. The Examiner also states that claim 6[1] is allegedly unclear for reciting ester bond hydrolysis in parts b) and d) while the hydrolysis of bonds (plural) is required in part e). The Examiner states, however, that R1 and R2 disclose hydrolysis of ester bonds therefore they meet the requirements of the claims. The Examiner further states that R2 teaches detecting action of phospholipase D which is specific for N-acyl phosphatidyl ethanolamine, and concludes that selectively hydrolyzing N-acyl phosphatidyl ethanolamine or N-acyl lysophosphatidyl ethanolamine would have been obvious over R1 in view of R2.

This rejection is respectfully traversed.

As the Examiner correctly notes, R1 teaches that lysophosphatidic acid and its salts possess advantageous properties as emulsifiers for use in foodstuffs and in particular for making dough and for use in the production of farinaceous products. R1, Abstract. R1 also discloses the various hydrolysis products of, e.g., soybean lecithin, when treated with phospholipase D and/or phospholipase A. R1, col. 4 generally.

[1] The Examiner refers to "claim 1"; however, Applicants respectfully submit that reference to independent claim 6 is intended, as claim 1 was previously canceled.

R2 is directed to an assay for the detection of N-acylphosphatidylethanolamine-hydrolyzing phospholipase D activity. R2, Abstract. Although N-acylphosphatidyl ethanolamine is referred to in R2 as "NAPE," this substrate is referred to in the instant application as "APE." Phospholipase D cleaves after the phosphate group of NAPE/APE, resulting in the formation of phosphatidic acid ("PA") and an alcohol, N-acylethanolamine ("NAE"). R2, Figure 1. R2 is silent as to baking additives.

As a preliminary matter, Applicants note that while no objection for clarity has been raised, the Examiner states in passing that "[a]s written, claim [6[2]] is not clear." In order to expedite prosecution, Applicants have amended step e) of the pending independent claim to recite ester bond in the singular form. Applicants respectfully request reconsideration of any aspect of the rejection based on the prior recitation of ester bonds, plural.

Thus, Applicants' claims are directed to a method of selecting a lipolytic enzyme for use as a baking additive comprising incubating at least one lipolytic enzyme with N-acyl phosphatidyl ethanolamine (APE) or N-acyl lysophosphatidyl ethanolamine (ALPE), b) detecting hydrolysis of an ester bond in the APE or ALPE, c) incubating the at least one lipolytic enzyme with phosphatidyl choline (PC), d) detecting hydrolysis of an ester bond in the PC, and e) selecting a lipolytic enzyme which has a higher hydrolytic activity on the ester bond in the APE or ALPE than on the ester bond in the PC.

Moreover, Applicants respectfully disagree with the Examiner's assertion that "R1 and R2 disclose the hydrolysis of ester bonds therefore the[y] meet the requirements of claim [6[3]] and the dependent claims." Importantly, the claims require not only hydrolysis of an ester bond of APE or ALPE as in step b) and the hydrolysis of an ester bond in PC as in step d), but critically, the claims require *selecting a lipolytic enzyme which has a higher hydrolytic activity on the ester bond in the APE or ALPE than on the ester bond in the PC*. It is the critical selection step e) which the art cited by the Examiner fails to appreciate.

Applicants do not dispute that enzymes having the activity of a phospholipase A and/or a phospholipase D were known in the art as of the priority date of the present invention. Nor do applicants dispute that phospholipases were known in the art as bread improvers as of the priority date of the present invention. In fact, it was the desire to rapidly screen *other* lipolytic enzymes to identify candidates for a baking additive which can improve the properties of a baked product when added to the dough which is the subject of the present invention. See, page 1, lines 20-22.

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[2] See FN 1.
[3] See FN 1.

As set forth in the specification as filed, evaluation of full-scale baking tests generally requires a major effort for isolating and producing each enzyme in sufficient quantity. Page 1, lines 9-11. In contrast to what was known in the art, the present inventors have developed a method of screening lipolytic enzymes to identify candidates for a baking additive which can improve the properties of a baked product when added to the dough. Page 1, lines 20-22. Lipolytic enzyme candidates selected according to the claimed screening methods can then be used in full-scale baking tests for further evaluation. Page 1, lines 9-11.

Nowhere does R1 teach or suggest the screening methods of Applicants' claims, and in particular, nowhere does R1 teach or suggest the *selection of a lipolytic enzyme which has a higher hydrolytic activity on ester bonds in the APE or ALPE than on ester bonds in the PC*.

Neither does R2 teach or suggest the claimed screening methods. Nowhere does R2 teach or suggest the *selection of a lipolytic enzyme which has a higher hydrolytic activity on ester bonds in the APE or ALPE than on ester bonds in the PC*.

Thus, neither R1 nor R2, either alone or in combination, teach or suggest Applicants' claimed methods.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 103. Applicants respectfully request reconsideration and withdrawal of the rejection.

III. Conclusion

In view of the above, it is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to contact the undersigned by telephone if there are any questions concerning this amendment or application.

All required fees were charged to Novozymes North America, Inc.'s Deposit Account No. 50-1701 at the time of electronic filing. The USPTO is authorized to charge this Deposit Account should any additional fees be due.

Respectfully submitted,

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